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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,391	02/22/2002	Kofi Dankwa Anim-Appiah	TI-33234	1578
23494	7590	02/24/2006	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			AMINZAY, SHAIMA Q	
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DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/081,391	Applicant(s) ANIM-APPIAH ET AL.	
	Examiner Shaima Q. Aminzay	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed December 12, 2005 have been fully considered.

1. Arguments with respect to the objected claims 1, 9, 20, and 24 is moot, amendment to the claims 1, 9, 20 and 24 meets the requirements, therefor the objection with respect to claims 1, 9, 20 and 24 are withdrawn.
2. Arguments with respect to the claim 1 under 35 USC § 112 first paragraph is moot, applicant's remark is convincing, and meets the requirements, therefore the rejection under 35 USC § 112 first paragraph is withdrawn.
3. Applicant's arguments with respect to claims 1-24 under 35 U.S.C.103(a) Rejection has been fully considered, but they are not persuasive.

The applicant's argued features in the claims, i.e., providing a wireless communication system, comprising: "N, of wireless front end units; the same number, N, of antennas and a switching arrangement connected between the N wireless front end units and the N antennas for permitting any of the wireless front end units to be switched into connection with any of the antennas while also maintaining the remaining wireless front end units connected to respective ones

of the remaining antenna", and "number N of wireless front end units and the same number N of antennae and the switching arrangement for permitting any of the wireless front end units to be switched into the connection with any of the antennae while maintaining the remaining wireless front end units connected to respective ones of the remaining antennas" to be established read upon Meredith (Meredith et al. U. S. Patent number 5,701,596) in view of Dam (Dam et al. U. S. Publication number 2001,001,6504 A1) as follows.

Meredith disclose a wireless communication system, comprising: a number of wireless radio channel Units and a number of antennas including the transmit filters, buffers, and a switching arrangement of "1-pole-N-Throw" switches connected between the number of wireless radio channel units and the number of antennas for permitting the wireless radio channel units to be switched into connection with the antennas, and sharing the number of antennas among the number of wireless radio units to optimize diversity transmission or reception quality (see for example, column 1, lines 13-20, column 3, lines 65-67 continued to column 4, lines 1-4, Figure 10, N number of radio channel Units, N antennas including the transmit filters, buffers and "Lossy combiner sum" units, "1-pole-N-Throw" switches, column 10, lines 16-33, column 1, lines 35-43, column 3, lines 41-48), the plurality of antennas permitting connection with any of the antennas, e.g. 1-pole-N-throw switches with the number "N" can be adjusted accordingly as an example connection of the 2 radios and 2 antennas, when the radio of interest is connected to the one of the antennas, the other radio stays connected with the

remaining antenna, however, Meredith does not specifically teach connected to respective ones of the remaining antenna, in related art dealing with wireless units switching arrangement and antennas, Dam teaches the units connected to respective ones of the remaining antenna that is the antenna array 460 can be connected to any of the radio transmitters (410) and receivers (420) through switches 480 and 490 while maintaining the remaining radios connected to respective antennas.

Meredith and Dam are both analogous to the applicants teaching, that's why they do obviate.

Therefor, the rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-21, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meredith (Meredith et al. U. S. Patent number 5,701,596), and in view of Dam (Dam et al. U. S. Publication number 20010,016,504 A1).

Regarding claim 1, Meredith teaches a wireless communication system (see for example, column 1, lines 13-20, column 3, lines 65-67 continued to column 4, lines 1-4), comprising: a number N of wireless front end units (see for example, Figure 10, "radio channel Unit" one to N), comprising: a number, N, of wireless front end units (see for example, Figure 10, column 2, lines 6-24, lines 55-64, column 4, lines 1-4, lines 46-57, column 7, line 63, viewing in Figure 10 the number ($M \Rightarrow N$) of wireless radio channel units (front end units)); the same number, N, of antennae (see for example, Figure 10, column 2, lines 6-24, lines 55-64, column 4, lines 1-4, lines 46-57, column 6, lines 30-43, column 7, line 62, column 9, lines 13-28, lines 59-63, viewing in Figure 10 the number (N) of antennas that can be modify "If it is desired to increase the number of radio

channel units or the number of antennas the modular components may be modified accordingly”), and a switching arrangement connected between the N wireless front end units and the N antennas for permitting any of the wireless front end units to be switched into connection with any of the antennas (see for example, Figure 10, column 2, lines 55-64, column 6, lines 30-43, column 7, line 62-63, column 8, line 2, column 9, lines 13-28, lines 59-63, column 10, lines 4-17, the switching arrangement connecting the plurality radios (front end unit) to the plurality of antennas permitting connection with any of the antennas, e.g. 1-pole-N-throw switches with the number “N” can be adjusted accordingly) while also maintaining the remaining wireless front end units connected to [respective ones of] the remaining antenna (see for example, Figure 10, column 3, lines 41-60, as an example connection of the 2 radios and 2 antennas, when the radio of interest is connected to the one of the antennas, the other radio stays connected with the remaining antenna).

Meredith does not specifically teach connected to respective ones of the remaining antenna.

In related art dealing with wireless units switching arrangement and antennas (see for example, paragraph [000], lines 1-5, [0002], lines 1-3, and paragraphs [0014], lines 1-17, and [0015] lines 1-9), Dam teaches the wireless units connected to respective ones of the remaining antenna (see for example, Figure 4, paragraph [0030], lines 1-9, [0032], lines 1-16, [0033], lines 1-18, the antenna array 460 can be connected to any of the radio transmitters (410) and receivers

(420) through switches 480 and 490 while maintaining the remaining radios connected to respective antennas).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Dam's antennas arrangement (see for example, paragraph [0012], lines 4-6, and [0013], lines 1-8) with Meredith's mobile communications interconnection of plurality of radios with plurality of antennas (see for example, column 1, lines 9-10, and lines 13-20) to provide mobile communication system with diversity combination technique for interconnection of plurality of radios with a plurality of antennas (see for example Dam, paragraph [0012], lines 4-6, and [0013], lines 1-8; Meredith column 1, lines 9-10, and lines 13-20), and to provide "the flexibility in operation of the transceiver to more efficiently perform certain transceiver" (Dam, paragraph [0013], lines 6-8).

Regarding claim 2, Meredith in view of Dam teach claim 1, and further Meredith teaches switching arrangement includes N switches (see for example, Figure 10, column 8, line 2, switching arrangement include N (M) switches).

Regarding claim 3, Meredith in view of Dam teach claim 1, and further Meredith teaches a controller coupled to the N switches for synchronously controlling the N switches (see for example, column 3, lines 7-31, and lines 49-64).

Regarding claim 4, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein said controller is for switching the N switches simultaneously (see for example, column 3, lines 7-31, and lines 49-64).

Regarding claim 5, Meredith in view of Dam teach claim 1, and further Meredith teaches controller synchronously controls the N switches using a single control signal (see for example, column 3, lines 7-31, and lines 49-64).

Regarding claim 6, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein each of the N switches is a single-pole switch (see for example, column 6, lines 38-43).

Regarding claim 7, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein each of the N switches further includes N contacts (see for example, column 6, lines 35-60, and column 8, line 2, and column 9, lines 59-63, column 10, lines 16-18).

Regarding claim 8, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein each of the N switches is an N-throw switch (see for example, column 6, lines 38-43).

Regarding claim 9, Meredith in view of Dam teach claim 1, and further Dam

teaches wherein the N switches are respectively coupled to the N antennas (see for example, Figure 4, paragraph [0030], lines 1-9, [0032], lines 1-16, [0033], lines 1-18).

Regarding claim 10, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein the N switches are each coupled to all of said wireless front end units (see for example, Figure 10, column 2, lines 55-64, column 6, lines 30-43, column 7, line 62-63, column 8, line 2, column 9, lines 13-28, lines 59-63, column 10, lines 4-17).

Regarding claim 11, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein each wireless front end unit is coupled to all of the N switches (see for example, Figure 10, column 2, lines 55-64, column 6, lines 30-43, column 7, line 62-63, column 8, line 2, column 9, lines 13-28, lines 59-63, column 10, lines 4-17).

Regarding claim 12, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein each of the N switches comprises at least one single-pole-double-throw switch (see for example, column 6, lines 38-43, single-pole-N-throw, number N can have a value of double).

Regarding claim 13, Meredith in view of Dam teach claim 1, and further

Meredith teaches wherein said switching arrangement includes 2N switches.
(see for example, column 6, lines 30-43, in Figure 1A and 1B the controller (267)
is connected to 240 and 217).

Regarding claim 14, Meredith in view of Dam teach claim 1, and further
Meredith teaches wherein said switching arrangement includes a controller
coupled to the 2N switches for synchronously controlling the 2N switches (see for
example, column 6, lines 30-43, column 9, lines 13-28).

Regarding claim 15, Meredith in view of Dam teach claim 1, and further
Meredith teaches wherein said controller is for switching the 2N switches
simultaneously (see for example, column 3, lines 7-31, and lines 49-64).

Regarding claim 16, Meredith in view of Dam teach claim 1, and further
Meredith teaches wherein said controller synchronously controls the N switches
using a single control signal (see for example, column 3, lines 7-31, and lines 49-
64).

Regarding claim 17, Meredith in view of Dam teach claim 1, and further
Meredith teaches wherein each of the 2N switches is a single-pole switch (see
for example, column 3, lines 7-31, and lines 49-64).

Regarding claim 18, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein each of the $2N$ switches further includes N contacts. (see for example, column 6, lines 35-60, and column 8, line 2, and column 9, lines 59-63, column 10, and lines 16-18).

Regarding claim 19, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein each of the $2N$ switches further comprises at least one single-pole-double-throw switch (see for example, column 6, lines 38-43, single-pole- N -throw, number N can have a value of double).

Regarding claim 20, Meredith in view of Dam teach claim 1, and further Meredith teaches a further N of the switches are respectively coupled to the N wireless front end units (see for example, Figure 10, column 2, lines 55-64, column 6, lines 30-43, column 7, line 62-63, column 8, line 2, column 9, lines 13-28, lines 59-63, column 10, lines 4-17), and each of the first N switches are coupled to each of the further N switches (see for example, column 6, lines 35-60, and column 8, line 2, and column 9, lines 59-63, column 10, lines 16-18).

Regarding claim 21, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein the N wireless front end units are radio front end units (see for example, Figure 10, column 2, lines 6-24, lines 55-64, column 4, lines 1-4, lines 46-57, column 7, line 63, viewing in Figure 10 the number ($M \Rightarrow N$) of

wireless radio channel units (front end units)).

Regarding claim 23, Meredith in view of Dam teach claim 1, and further Meredith teaches wherein said switching arrangement includes a controller for assigning each of the N wireless front end units to a respective one of the N antennas (see for example, Figure 10, column 2, lines 55-64, column 6, lines 30-43, column 7, line 62-63, column 8, line 2, column 9, lines 13-28, lines 59-63, column 10, lines 4-17).

Regarding claim 24, Meredith in view of Dam teach claim 1, and further Dam teaches wherein said switching arrangement includes at least one single-pole switch connected between each of said wireless front end units and each of said antennas (see for example, Figure 10, column 2, lines 55-64, column 6, lines 38-43, column 7, line 62-63, column 8, line 2, column 9, lines 13-28, lines 59-63, column 10, lines 4-17).

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meredith (Meredith et al. U. S. Patent number 5,701,596) in view of Dam (Dam et al. U. S. Publication number 2001,001,6504 A1), and further in view of Vaisanen (Vaisanen et al. U. S. Patent number 6,560,443).

Regarding claim 22, Meredith in view of Dam teach claim 21, and further Dam

teaches the GSM systems (see for example, paragraph [0029], lines 10-13).

Meredith in view of Dam do not teach the Bluetooth and the standard IEEE 802.11.

Vaisanen teaches the Bluetooth units and the standard IEEE 802.11 (see for example, column 1, lines 8-14, and column 4, lines 43-50).

It would have been obvious to one of ordinary skill in the art at the time invention was made to include Vaisanen's Bluetooth and standard IEEE 802.11 with Dam's and Meredith's communications interconnection of plurality of radios with plurality of antennas to provide mobile communication system with diversity combination technique that shares the "diversity antennas efficiently and as economically as possible" (Vaisanen, column 3, lines 44-46).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shaima Q. Aminzay whose telephone number is 571-272-7874. The examiner can normally be reached on 7:00 AM -5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 571-272-7882. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shaima Q. Aminzay
(Examiner)

February 20, 2006

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h.o. 2/21/06

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(SPE)